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10/789,272	02/27/2004	Elaine W. Jin	86387SHS	9378
7590 Pamela R. Crocker Patent Legal Staff Eastman Kodak Company 343 State Street Rochester, NY 14650-2201				
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EXAMINER				
LEE, JOHN W				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/789,272

Applicant(s)

JIN ET AL.

Examiner

JOHN Wahnkyo LEE

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
4a) Of the above claim(s) 24-34 and 44-52 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-23, 35-43 and 53-57 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 27 February 2007 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 20040227, 20040706, 20040813 and 20051017
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-23, 35-43, and 53-57 are drawn to a combination, classified in class 382, subclass 154.
 - II. Claims 24-34 and 50-52 are drawn to subcombination, classified in class 382, subclass 106.
 - III. Claims 44-49 are drawn to subcombination, classified in class 345, subclass 594.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II-III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed such as calculating the aim disparity range subject and user interface. The subcombination has separate utility such as calculating the aim disparity range and a user interface for obtaining the stereoscopic capabilities of a user.

2. Applicant's election without traverse of combination I in the reply filed on 19 March 2008 is acknowledged.

Information Disclosure Statement

3. Initialed and dated copies of Applicant's IDS form 1449- Paper No. 20040227, 20040706, 20040913 and 20051017, are attached to the instant Office action.

Claim Objections

4. Claims 3-4 and 8 are objected to because of the following informalities: All of the claims specify the (f) step. However, it seems that there can be only one (f) step. It is required for the applicant to resolve this problem. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 35-40 and 54-57 are rejected under 35 U.S.C. 102(b) as being anticipated by Zhang (US 2003/0197779).

Regarding claim 35, Zhang discloses a stereoscopic display system customized for a user's stereoscopic fusing capability (Fig. 12; paragraphs [0082] and [0083]), comprising: a) a processor for processing images and/or rendering images (Fig. 12-1204; paragraph [0085], "processing unit"); b) an image source communicatively linked to the processor for supplying imagery to the processor (Fig. 1-108; paragraph [0025],

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"two cameras"); c) a storage device communicatively linked to the processor for storing useful data that will enable the processor to process images and/or render images (Fig. 12-1216; paragraph [0088], "hard disk drive"); and d) a stereoscopic display device communicatively linked to the processor and driven by the processor to display stereo images (Fig. 12-1242; paragraph [0093], "monitor.. display device").

Regarding claim 36, Zhang discloses wherein the useful data including display attributes and/or customization information relevant to the user (Fig. 3-307; paragraph [0034], "personalize three dimensional model of the conferee stored in a database").

Regarding claim 37, Zhang discloses wherein the customization information relevant to the user including rendering intent and/or a user profile (Fig. 3-307; paragraph [0034], "personalize three dimensional model of the conferee stored in a database").

Regarding claim 38, Zhang discloses comprising: e) an input device communicatively linked to the processor for providing input data and/or functions to the processor (Fig. 12-1240; paragraph [0092], "I/O interface").

Regarding claim 39, Zhang discloses comprising: e) a sensor communicatively linked to the processor for providing sensory data and/or functions about the user to the processor (Fig. 1-108; paragraph [0025], "two cameras").

Regarding claim 40, Zhang discloses wherein the sensory data includes head positioning, accommodative state of the user's eye and direction of eye gaze of the user (Figs. 2-204 and 3; paragraphs [0032] and [0084], "eye-gaze correction module").

Regarding claim 54, Zhang discloses a stereoscopic display system customized for a user's stereoscopic fusing capability (Fig. 12; paragraphs [0082] and [0083]), comprising: a) an image processor for processing images (Fig. 12-1204; paragraph [0085], "processing unit"); b) a rendering processor communicatively linked to the image processor for rendering images (Fig. 12-1204; paragraph [0085], "processing unit") c) an image source communicatively linked to the image processor for supplying imagery to the image processor (Fig. 1-108; paragraph [0025], "two cameras"); d) a storage device communicatively linked to the image processor and the rendering processing for storing display attributes data that will enable the image processor and the rendering processor to process images and/or render images (Fig. 12-1216; paragraph [0088], "hard disk drive"); e) a storage device communicatively linked to the rendering processing for storing customization information that will enable the rendering processor to render images (Fig. 12-1216; paragraph [0088], "hard disk drive"), and; f) a stereoscopic display device communicatively linked to the rendering processor and driven by the rendering processor to display stereo images (Fig. 12-1242; paragraph [0093], "monitor.. display device").

Regarding claim 55, claim 55 is analogous and corresponds to claim 38. See rejection of claim 38 for further explanation.

Regarding claim 56, claim 56 is analogous and corresponds to claim 39. See rejection of claim 39 for further explanation.

Regarding claim 57, claim 57 is analogous and corresponds to claim 40. See rejection of claim 40 for further explanation.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-6, 9-11, 14, 16-20, 41 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 2003/0197779) in view of Dhond et al. ("Stereo Matching in the Presence of Narrow Occluding Objects Using Dynamic Disparity Search"), and further in view of Nefian et al. (US 2003/0113018).

Regarding claim 1, Zhang discloses a method for customizing scene content (Fig. 4; abstract), according to a user or a cluster of users (Fig. 1-A and B, abstract, "conferee"), for a given stereoscopic display (Fig. 12-1242 and 1248), comprising the steps of: a) obtaining customization information about the user (Fig. 3-307; paragraph [0034], "personalize three dimensional model of the conferee stored in a database"). However, Zhang does not disclose rest of the claim limitations of steps c) to d). Instead of Zhang, Nefian discloses obtaining a scene disparity map (Fig. 2-210; paragraph [0022], "creation of a depth disparity map") for a pair of given stereo images (Fig. 2-200; paragraph [0022], "stereo video") and/or a three-dimensional (3D) computer graphic model; d) generating a customized disparity map and/or rendering conditions for a three-dimensional (3D) computer graphic model correlating with the user's fusing capability of the given stereoscopic display (chapter IV-F; Fig. 3; page 721, "composite disparity map"); and e) applying the customized disparity map and/or rendering

conditions for rendering or re-rendering the stereo images for subsequent display (Fig. 2-270; paragraph [0024], "... three dimensional extraction"); Dhond discloses c) determining an aim disparity range for the user (chapter IV-A; Fig. 3; page 721, "disparity range [min_disp, max_disp]").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Nefian's invention and Dhond's invention in Zhang's invention to create a dynamic stereoscopic system.

Regarding claim 2, Zhang further discloses wherein the customization information includes a user profile and/or a rendering intent subject to a predetermined task choice and/or skill level (Fig. 3-307; paragraph [0034], "personalize three dimensional model of the conferee stored in a database").

Regarding claim 3, Zhang further comprising the step of: f) obtaining display attributes prior to determining the aim disparity range for the user (paragraph [0025], "capture different views of the conferees").

Regarding claim 4, Zhang further discloses comprising the step of: f) displaying the stereo images compatible to the user's capacity for fusing stereoscopic imagery (Fig. 1; paragraph [0025], "... display monitor ... stereoscopic view ...").

Regarding claim 5, Nefian further discloses wherein the stereo images or 3D computer graphic model being obtained (Fig. 2-200; paragraph [0022], "stereo video").

Regarding claim 6, Nefian further discloses wherein the scene disparity map being obtained for rendered stereo images (Fig. 2-210; paragraph [0022], "creation of a depth disparity map").

Regarding claim 9, Dhond further discloses wherein the step of generating a customized disparity map further including using the scene disparity map for specific scene content and the aim disparity range according to the user in combination with a predetermined mapping function (chapter IV-F; page 721, " $d_{comp}(i,j)$ ").

Regarding claim 10, Dhond further discloses wherein the predetermined mapping function being dependent on a region of interest (chapter IV-A; page 721, "BG and FG").

Regarding claim 11, Dhond further discloses wherein the region of interest being dynamic (chapters IV-A and B; Fig. 3; page 721, "DDS").

Regarding claim 14, Dhond further discloses wherein the step of generating the customized disparity map including a re-mapping process (chapter IV-F; page 721, " $d_{comp}(i,j)$ ").

Regarding claim 15, Nefian further discloses wherein the step of generating the customized disparity map being accomplished by applying a linear transformation to the scene disparity map (equations (5) and (6); paragraph [0038], "Gaussian

Regarding claim 16, Nefian further discloses wherein the step of generating the customized disparity map being accomplished by applying a non-linear transformation to the scene disparity map (equations (5) and (6); paragraph [0038], "Gaussian probability density function").

Regarding claim 17, Dhond further discloses wherein a plurality of disparities in the scene disparity map being increased after re-mapping the customized disparity map(chapters IV-A and F).

Regarding claim 18, Dhond further discloses wherein a plurality of disparities in the scene disparity map being decreased after re-mapping the customized disparity map(chapters IV-A and F).

Regarding claim 19, Dhond further discloses wherein the region of interest being based upon a measurement of fixation position (Fig. 3; chapter IV-C).

Regarding claim 20, Dhond further discloses wherein the region of interest being based upon a map of probable fixations (Fig. 3; chapter IV-C).

Regarding claim 41, claim 41 is analogous and corresponds to claim 1. See rejection of claim 1 for further explanation.

Regarding claim 53, Dhond discloses selecting a mode (chapter IV; page 720, "BG and FG disparity pools") of determining an aim disparity range for the user. Rest of the claim limitations are analogous and correspond to claim 1. See rejection of claim 1 for further explanation.

9. Claims 7-8, 12-13, 15, 21-23 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 2003/0197779) in view of Dhond et al. ("Stereo Matching in the Presence of Narrow Occluding Objects Using Dynamic Disparity Search"), and further in view of Nefian et al. (US 2003/0113018) and further in view of Woods et al. ("Image Distortions in Stereoscopic Video Systems").

Regarding claim 7, Zhang, Nefian and Dhond disclose all the previous claim limitation including depth information being obtained from the 3D computer graphics model (chapter IV-A; Fig. 3; page 721, "disparity range [min_disp, max_disp]"), which is disclosed by Dhond. However, Zhang, Nefian and Dhond do not disclose the convergence point, but Woods does. Woods discloses wherein a scene convergence point (Chapter 1-1.2; page 2, "convergence point").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Nefian's invention, Dhond's invention and Woods's invention in Zhang's invention to create a dynamic stereoscopic system.

Regarding claim 8, Woods further discloses comprising the step of: f) determining a viewing distance of the user (Chapter 1-1.2; page 2, "convergence point").

Regarding claim 12, Woods further discloses wherein that the rendering intent can be dependent on skill of the user within a stereoscopic viewing environment (chapter IV-1.2; page 2, "... variables ...").

Regarding claim 13, Woods further discloses wherein the rendering intent correlating to a type of task that the user will perform in a stereoscopic viewing environment (Figs. 2 and 3; chapter IV-1.2; page 2, "... variables ...").

Regarding claim 15, Woods further discloses wherein the steps of generating the customized disparity map being accomplished by applying a linear transformation to the scene disparity map (equation (5) and (6)).

Regarding claim 21, Woods further discloses wherein the step of determining an aim disparity range undergoes a calculation based on parameters selected from the group consisting of a viewing distance for the user and the display attributes (chapter 1-1.2; pages 2 and 3).

Regarding claim 22, Woods further discloses wherein the step of generating rendering conditions for a three-dimensional (3D) computer graphic model including computing a location, an orientation, a focal distance, a magnification and a depth of field correlating to a pair of simulated cameras (Figs. 1-3; equations (1)-(14); chapters 1-1.2 and 1.3; pages 2-5).

Regarding claim 23, Woods further discloses wherein the step of applying the rendering conditions involving modifying one or more of a set of correlating camera measurements that include camera location, orientation, focal distance, magnification and depth of field (Figs. 1-3; equations (1)-(14); chapters 1-1.2 and 1.3; pages 2-5).

Regarding claim 42, Zhang, Dhond, Nefian discloses all the previous claim limitations. Moreover, Zhang discloses that wherein the means for determining an aim disparity range for the user, includes: a) means for obtaining a stereoscopic display user's identifier (paragraph [0040], "conferee's personalized face model is acquired ..." and "markers"); b) means for determining whether the stereoscopic display user has a user profile (paragraph [0040], "conferee's personalized face model is acquired ..."); c) means for retrieving a found user profile for the stereoscopic display user (paragraph [0040], "conferee's personalized face model is acquired ..."); d) means for creating the user profile where no existing user profile is found (Fig. 3-307; paragraph [0034],

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"personalize three dimensional model of the conferee stored in a database"). However, Zhang does not disclose rest of the claim limitations from step e) to h). Instead of Zhang, Wood discloses e) means for obtaining rendering intent correlating to the stereoscopic display user (chapter 1-1.3; equations (1)-(14); pages 3-5); f) means for assigning values for skill level (Cs) of the stereoscopic display user and type of tasks (Ct) that the stereoscopic display user will perform (chapters 1-1.2 and 1.3; equations (1)-(14); pages 2-5, "variables"). Dhond discloses g) means for assigning a value, as an adaptive factor, Ca, for compensating for a dynamic viewing experience (chapter IV-A; page 721, "fg_init" and "bg_init") subject to the stereoscopic display user; and h) means for calculating the aim disparity range subject to above steps (chapter IV-A; Fig. 3; "disparity range [min_disp, max_disp]").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Nefian's invention, Dhond's invention and Wood's invention in Zhang's invention to create a dynamic stereoscopic system.

10. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 2003/0197779) in view of Woods et al. ("Image Distortions in Stereoscopic Video Systems").

Regarding claim 43, Zhang discloses a stereoscopic display system (Fig. 12-1242 and 1248). However, Zhang does not disclose rest of the claim limitations. Instead of Zhang, Woods discloses a) means for determining aim disparity range based on optometric data (chapter 1-1.2; pages 2-3, "variables"), wherein said means further

include: b) means for obtaining optometric parameters (chapter 1-1.2; pages 2-3, "variables") for a set of accommodation planes (Fig. 2; page 3); c) means for generalizing the optometric parameters for a different set of accommodation planes (Fig. 2; page 3); d) means for calculating optometric parameters for a single accommodation plane of display (Fig. 3; page 4); e) means for obtaining comfort values for a user's fusing capability (chapter 1-1.3; equations (1)-(14); pages 3-5). Dhond discloses determining an aim disparity range (chapter IV-A; Fig. 3; "disparity range [min_disp, max_disp]") associated with a stereoscopic user; and f) means for determining the aim disparity range (chapter IV-A; Fig. 3; "disparity range [min_disp, max_disp]") based on the optometric parameters and above steps.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Woods's invention and Dhond's invention in Zhang's invention to create a dynamic stereoscopic system.

Conclusion

11. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN Wahnkyo LEE whose telephone number is (571)272-9554. The examiner can normally be reached on Monday - Friday (Alt.) 7:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MATTHEW C. BELLA can be reached on (571) 272-7778. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew C Bella/
Supervisory Patent Examiner, Art
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Examiner, Art Unit 2624